

geographic range over the southern part of the Mexican Plateau, and in some areas it has extended its range over the lip of the plateau and into the upper edge of the tropical zone on the slopes of the Sierra Madre. Populations in the Tropics have become isolated and have evolved into strongly differentiated races. *Neotoma f. griseoventer* would seem to represent another such race were it not for the fact that no wood rats of the *ferruginea* type have been reported from the Mexican Plateau of San Luis Potosí or from the lowlands to the east. Presumably *ferruginea* once occurred in the desert ranges of western San Luis Potosí. The known distribution of

griseoventer suggests that it was derived from a population of those wood rats that extended their range over the Sierra Madre and into the tropics. It is highly unlikely that the tropical rats of San Luis Potosí are directly connected with the tropical rats of Veracruz (*N. f. distincta*) along the entire length of the Sierra Madre Oriental. The wood rats of the Sierra Madre of San Luis Potosí seem to be a relic population isolated far to the north of the remainder of the range of the species.

Specimens examined.—Total number, 3, from: El Salto, 1; Xilitla, 2.

ORNITHOLOGY.—*The systematic relationships of the fox sparrows (Passerella iliaca) of the Wasatch Mountains, Utah, and the Great Basin.* WILLIAM H. BEHLE and ROBERT K. SELANDER, Museum of Zoology, University of Utah. (Communicated by Herbert Friedmann.)

While discussing the subspecies *Passerella iliaca schistacea* in his revision of the genus, Swarth (Univ. California Publ. Zool. 21: 155. 1920) commented that the race, even as he restricted it, probably covered a composite of two or more recognizable subspecies. This remark was probably prompted by differences that he detected between examples from Canada and northern Nevada. He did not have representatives from Utah. In 1941, the late Max M. Peet acquired a single specimen of fox sparrow taken 2 miles north of Mount Pleasant, Sanpete County, Utah, on March 17, which, upon comparison with the material in the Dickey Collection, caused the late A. J. van Rossem to express the opinion that it probably represented an undescribed race. Dr. Peet thereupon attempted to assemble specimens from the Utah area so as to work out the problem in collaboration with George M. Sutton, but material in museums was still too scarce to allow them to do so. During the last two years we have succeeded in obtaining considerable material from northern Utah. Following Dr. Peet's death, inquiry was made as to the status of the research. The ornithologists at the University of Michigan Museum graciously told us to go ahead with the problem and sent their comparative material for our use. We are indebted to Drs. J. Van Tyne, Robert W. Storer, and George M. Sutton for this courtesy, and to a number of

others as follows for the loan of comparative material: Alden H. Miller, Museum of Vertebrate Zoology; Herbert Friedmann, U. S. National Museum; Robert T. Orr, California Academy of Sciences; Thomas R. Howell, Dickey Collections, University of California at Los Angeles; Kenneth C. Parkes, Cornell University Laboratory of Ornithology; C. Lynn Hayward, Brigham Young University; and Howard Knight, Weber College.

Swarth (Proc. Biol. Soc. Washington 13: 163. 1918), in describing *P. i. canescens*, stressed the gray dorsal color of the birds from the White Mountain region of eastern California in contrast to the brown color of *schistacea*. Now it is disclosed that the birds from Utah are still grayer, so much so that *canescens* looks brown in comparison. Since this is the situation with birds from several locations in the northern part of the state, we feel this extreme gray population is of racial stature and so propose the name

Passerella iliaca swarthi, n. subsp.

Type.—Adult ♂, no. 11451, University of Utah Museum of Zoology, North Fork Ogden River, 5,200 feet, 2 miles west of Eden, Weber County, Utah; April 20, 1951; collected by Robert K. Selander and William H. Behle, original number 1018 (R.K.S.); testes 10 mm.

Subspecific characters.—Distinguished from *P. i. schistacea* by having a decided gray color to the head and back instead of brown; streaking on

breast heavier and less rufescent. Closer to *P. i. canescens* but grayer.

Measurements.—Adult male (32 breeding specimens): Wing, 87.0–76.0 (81.7); tail, 88.2–76.0 (82.4); exposed culmen, 13.3–10.4 (11.8); bill from nostril, 9.6–7.9 (8.6); depth of bill, 10.8–9.0 (9.5); width of bill, 9.2–7.4 (8.2); tarsus, 25.4–21.5 (23.6); middle toe with claw, 23.4–19.4 (20.9); hind toe with claw, 20.0–16.0 (18.6) mm. Adult females (9 breeding specimens): wing, 80.0–74.0 (76.8); tail, 79.3–74.4 (76.8); exposed culmen, 12.4–10.7 (11.6); bill from nostril, 9.2–7.7 (8.4); depth of bill, 10.0–9.0 (9.5); width of bill, 9.0–7.8 (8.2); tarsus, 23.8–22.5 (23.4); middle toe with claw, 24.0–18.6 (20.6); hind toe with claw, 20.8–16.3 (18.7) mm. Measurements were taken according to the methods described by Swarth (Univ. California Publ. Zool. **21**: 83–84. 1920).

Geographic range.—Breeds in northern Utah and southern Idaho. Winter range unknown.

Specimens examined.—*Idaho*: Owyhee County: Indian Creek, 2 miles southwest of Riddle, 5,500 feet, 1 (June). Bannock County: Pocatello Creek, 3 miles east of Pocatello, 1 (April, toward *schistacea*). Bear Lake County: Paris, 2 (April). *Utah*: Rich County: 12 miles southwest of Woodruff, 1 imm. (July). Cache County: 12 miles west of Garden City, 1 imm. (July). Box Elder County: George Creek near Yost, 6,200 feet, Raft River Mountains, 4 (May); Clear Creek, 3 miles southwest of Nafton, 5 (June). Weber County: North fork of Ogden River, 2 miles west of Eden, 5,200 feet, 12 (April–May). Summit County: Chalk Creek, 5,600 feet, 5 miles east of Coalville, 1 (June); Oakley, 6,500 feet, 2 (May); Kimballs Junction, 6,900 feet, 1 (April). Wasatch County: 3 miles west of Wallsburg, 5,000 feet, 1 (April). Salt Lake County: Salt Lake City, 1 (May); 2–5 miles east of mouth of Emigration Canyon, 2 (April–May); Silver Lake Post Office (Brighton), 8,750 feet, 1 (June). Utah County: Provo, 2 (March–June). Sanpete County: 2 miles north of Mount Pleasant, 1 (March). Tooele County: Lookout Mountain, 1 imm. (July). Juab County: 10 miles northeast of Nephi, 2 (April); head of Basin Creek, 9,500 feet, east slope of Deep Creek Mountains, 6 miles east of Indian Village, 1 (June).

Remarks.—Until the time of Swarth's revision there was confusion concerning the type locality of the race *P. i. schistacea* and some doubt as to which population the name applied. Swarth examined the type specimen and stated (*op. cit.* 154) that it is an adult female in badly molting

plumage, of little value for color comparisons, and probably was not breeding at the place where it was collected. This was along the South Platte River in Nebraska, probably between Laramie Crossing and Goodales Crossing approximately 200 miles west of Fort Kearny. There seems little doubt from Swarth's remarks that this represents a distinctly brown bird. He noted a similarity between this type specimen, birds from the Pine Forest Mountains, Nev., and summer birds from the vicinity of Fort Bridger, Wyo. Thus, he conceived of *schistacea* occurring throughout the Great Basin as well as in the interior region to the north.

As new material accumulated it was found that this conclusion was incorrect. Linsdale (Pacific Coast Avif. **23**: 131, 1936) disclosed that the race *canescens* is not confined to the White Mountain region, but extends eastward through Esmeralda County to White Pine County, Nev. Aldrich (Proc. Biol. Soc. Washington **56**: 163–166. 1943) describes the race *olivacea* from Washington. Now it develops that this new race, *swarthi*, occupies the eastern portion of the Great Basin. The range of *swarthi* is not extensive, however, and evidence exists of clines connecting it with *schistacea* to the east, north, and northwest, and probably with *canescens* to the southwest. The southern limits of the range of the species are reached in central Utah so there is no problem of intergradation to the south.

The center of differentiation of this gray population, *swarthi*, appears to be in the Wasatch Mountains of northern Utah. Progressing eastward and northeastward there is evidence of a gradient toward a population with a brown dorsum. A breeding specimen from Chalk Creek, 5,600 feet, 5 miles east of Coalville, Summit County, Utah, is fairly gray, but one from a few miles farther northeast at 3 miles north of the Utah State line on Bear River, 7,450 feet, Uintah County, Wyo., is brown and seemingly transitional toward *schistacea*. A single specimen from Long Lake, head of Ashley Creek, Uintah County, Utah, taken in July, is an immature example, but is in nearly complete first fall plumage. It is too brown for typical *swarthi*, suggesting that the transition to *schistacea* occurs immediately east of the Wasatch Mountains in the Uintah Mountain region of eastern Utah. We have had no material from Colorado available so as to trace this cline farther east.

The birds from Fort Bridger that Swarth had and that we have examined are a puzzling lot.

They are brown and thus similar to *schistacea*, as Swarth noted. This may, however, be attributed to foxing, for the specimens were taken in 1858, and two were evidently once mounted specimens. It may be that fresh material would reveal that the fox sparrows from here are *swarthi*, but it now appears that a rather abrupt transition from *swarthi* to *schistacea* occurs between the headwaters of the Weber and Bear River drainages.

Further evidence of the transition to *schistacea* is seen in the two August specimens from Bear Lake County in southeastern Idaho which are slightly browner than topotypical examples of *swarthi* and so intergradational. A mid-August example from Afton, Wyoming, a specimen from Teton Mountain taken on August 28, and one from Teton Pass, September 11, are all referable to *schistacea*.

To the northwest, a series of breeding examples from the Raft River Mountains are closer to *swarthi* but are slightly browner than topotypical specimens. This again indicates the beginnings of a character gradient toward *schistacea*. A specimen from Pocatello Creek, Bannock County, Idaho, is almost exactly intermediate between the two races. Although taken April 2, it had testes 8 mm long and was probably on its breeding ground. It is arbitrarily placed with *swarthi*. North of this location, the fox sparrows are closer to *schistacea* which probably exists in typical form in northern Idaho. Examples from Idaho that we have examined which are referable to *schistacea* are as follows: Cottonwood Creek, 2 miles west of Craters of the Moon, Blaine County (July); Glidden Lakes, 5,700 feet, Shoshone County (July); Beaver Ridge, 6 miles south southwest Lolo Pass, 6,000 feet, Idaho County (July); Coeur d'Alene, Kootenai County (April-May); Hunt Peak, Selkirk Mountain, Boundary County (August). Also referable to *schistacea* are specimens from the Wallowa Mountain area in southeastern Oregon, the specific localities being 16 miles south and 3 miles east of Lostine, 5,500 feet, Wallowa County (July) and North Fork of the Malheur River, 15 miles east and 12 miles south of Prairie City, 5,100 feet, Baker County, Oregon (July).

Apparently *swarthi* gives way to *schistacea* as one proceeds westward across northern Nevada. A single worn specimen taken July 15 at Cedar Creek, 6,000 feet, 10 miles northeast of San Jacinto, Elko County, is like specimens of the series from the Raft River Mountains and is

probably closer to *swarthi*. Three breeding birds and several taken in September from the Santa Rosa Mountains, Humboldt County, farther to the west, are brown and thus referable to *schistacea*. They are very similar to those from the Pine Forest Mountains still farther west.

While our principal concern has been to show that these specimens from central northern and northwestern Nevada are not *swarthi*, it may not be amiss to call attention to the problem in connection with the birds of northern Nevada. Although Swarth referred the Pine Forest Mountain series to *schistacea*, he noted differences between them and examples from the Banff (Canada) region. The chief difference is that birds from the latter locality have shorter tails (see Swarth, Univ. California Publ. Zool. 21: 155, 182. 1920). He suggested that either the Banff birds are from an area of intergradation between *schistacea* and *altivagans*, with the birds from northern Nevada being truly representative of *schistacea*, or the short tailed, small billed, rufescent northern birds represent true *schistacea*, and the birds from northern Nevada belong to another race. This problem still remains undecided, and until much more material is available to bridge the intervening areas, the Pine Forest series is best referred to *schistacea*, as both Swarth and Linsdale have done.

In Swarth's table of measurements (*op. cit.* 182-183), a series of six male specimens, presumably adults, of the race *canescens* has a shorter length of bill than do series of *schistacea*. Thirty breeding male specimens of *canescens* from Esmeralda, Nye, and Lander Counties, Nev., were measured by us with results as follows: Wing, 83.3-77.1 (81.4); tail, 86.2-75.6 (80.9); exposed culmen, 12.3-10.0 (11.2); bill from nostril, 9.4-7.6 (8.5); depth of bill, 10.0-8.4 (9.3); width of bill, 8.8-7.6 (8.2); tarsus, 25.8-20.2 (23.3); middle toe with claw, 23.0-17.5 (20.4); hind toe with claw, 19.8-16.0 (18.0) mm.

This lot of *canescens* and our series of *swarthi* are therefore comparable in size, and furthermore, they are essentially the same size as the Pine Forest Mountain series representing *schistacea*. It was noted that the immature specimens in the topotypical series of *canescens* have smaller bills than do the adults. Nine adult male topotypes or near topotypes of *canescens* have the following measurements: exposed culmen, 11.7-10.3 (11.3); bill from nostril, 9.0-7.8 (8.3); depth of bill, 10.6-9.0 (9.6); width of bill, 8.8-8.3 (8.5) mm.

This further corroborates the lack of significant differences in size of bill between the three races, *canescens*, *swarthi* and *schistacea*.

The material available is inadequate for working out the details of the transition between *swarthi* and *canescens*, which probably takes place in the mountains of central eastern Nevada between the Snake and Toyabe Mountains. A single breeding specimen from the Deep Creek Mountains in extreme western Utah is referable to *swarthi*. In addition to a gray dorsum it has an unusually heavily marked breast with dark, slate colored blotches. A single specimen from the Snake Range in Nevada, a short distance to the south of the Deep Creek Mountains, taken September 22, is brown and referable to *schistacea*. It was, however, probably a transient. Breeding birds from Kingston Creek in the Toyabe Mountains are brown and thus represent *canescens*.

The distribution of the races of fox sparrows in Nevada remains, then, as Linsdale (*op. cit.*) has indicated, except that the breeding birds of the Snake Range probably represent *swarthi*.

Some other examples of fall transients of *schistacea* from the breeding range of *swarthi* are two from 4 miles northeast of Ogden, 8,000 feet, taken September 22 and 29. Several early April atypical examples of *swarthi* are probably transients from areas of intergradation between that race and *schistacea*.

The places of occurrence and ecological relationships of fox sparrows of the race *swarthi* are essentially as Linsdale (Amer. Midl. Nat. 19: 167-170. 1938) described for the race *canescens* in the Toyabe Mountains of Nevada, thus being further indicative of the close relationship between *canescens* and *swarthi*.

ZOOLOGY.—Two new species of incrusting ctenostomatous Bryozoa from the Pacific.¹

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Examination of specimens dredged recently from the Arctic Ocean off Point Barrow, Alaska, by the Arctic Research Laboratory and off the coast of southern California by the Allan Hancock Foundation has revealed two species of ctenostomatous bryozoans of the group *Carnosa* which are believed to be new.

Family ALCYONIDIIDAE Hincks, 1880

Alcyonidium enteromorpha, n. sp.

Diagnosis.—Zoarium robust, coriaceous, linear, flexuous, measuring 61 cm in length and 4 to 6 mm in width, anchored directly to the substratum without evidence of a peduncle. Cuticle moderately thick. Zooecia irregular, ranging in shape from rectangular to hexagonal. No raised oral papillae. Polypide with 17 tentacles.

Description.—Macroscopically the chitinous, leathery zoaria superficially resemble the intestinal tract of a small mammal, being unusually elongate, without lateral branching. Coiled in several loose folds, gutlike, and attached to the substratum without the benefit of a peduncle. The cuticle is firm, mottled light brown to tan, and only moderately thick. The zoaria have a central cavity filled with a loose reticular packing

tissue in which may be found numerous brown-bodies. The zooecia are well defined, easily found in the portions of a zoarium where the cuticle is thin. However, on the greater part of a zoarium the lateral zooecial walls can be only faintly discerned, and while not totally obscured they are somewhat difficult to trace. The ventral zooecial wall is smooth with no oral papillae present. The dorsal wall is thin to the point of transparency. In shape the zooecia are quite variable, ranging from rectangular to irregularly hexagonal, those containing mature polypides measuring between 230 μ to 403 μ in length, and 115 μ to 253 μ in width. The polypide itself in no way deviates morphologically from the normal anatomical pattern typical of the genus *Alcyonidium* s.s. The tentacle number determined by serial sections is 17. Whole mounts of several individual polypides, as well as sections, were prepared, stained and examined for evidence of a gizzard. Polypides of *A. polyoum* (Hassall) and *A. pedunculatum* Robertson were mounted for purposes of comparison.

The species described above differs from *Alcyonidium* (*Paralcyonidium*) *vermiculare* Okada, 1925, in the following ways: (1) The zoarium is larger, with a uniform width of 4 to 6 mm as against 2 to 3 mm for *A. vermiculare*; (2) the polypide does not have a gizzard, as is described for *A. vermiculare*; (3) the tentacle number is

Contribution no. 63 from the Allan Hancock Foundation, University of Southern California.